PROJECT CHARGE: 1703

PROJECT TITLE: CIGARETTE MAKING TECHNOLOGY

PROJECT LEADER: A. Robinson

PERIOD COVERED: August 1 - 31, 1981

DATE OF REPORT: September 10, 1981

ADHESIVE PROPERTIES (T. E. Majewski)

The adhesive GC/Headspace analysis work has continued. The analysis technique was evaluated as a possible tool to monitor PVac-based side-seam adhesives for batch-to-batch chemical consistency. The technique was evaluated on two Polymer Industries adhesives from different lots. There were no obvious dissimilarities in the adhesives chromatograms.

Infra-red analysis was used to determine if certain compounds identified in adhesives' headspace could also be identified by IR.

It was found that the IR band at 710 cm^{-1} in the plasticizer Benzoflex 9-88 (dipropylene glycol dibenzoate) spectrum was also prominent in an Ajax 563-8 sample spectrum.

ADHESIVE SURFACE BEHAVIOR STUDIES (R. G. Armstrong)

Contact angle and surface tension measurements were made on mechanically worked adhesive samples from the two Ajax 563-8 products which caused production problems during the week of June 29.

A value for an adhesion tension parameter was calculated from the measurements results. The magnitude of the parameter indicates the relative affinity (i.e., spreadability) an adhesive has for a specific substrate.

The results are as follows:

Working Speed (rpm)	New Plasticizer dyne/cm	Old Plasticizer dyne/cm
0	8.97	8.55
3,500	5.07	14.02
6,800	4.70	12.69
10,000	9.86	11.59
14,000	12.31	11.23
17,000	9.91	13.07
20,000	12.60	13.38
23,000	13.64	13.27

The new plasticizer adhesive was observed as having a greater propensity to buildup on the production machinery.

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RHEOLOGY (C. B. Hoelzel)

Homogenized OTM samples (previously called STP) continue to be received from the Tobacco Products Standards Group for rheological examination. Rheological curves were obtained for samples selected to represent variations in density and solids content.

NEW ADHESIVE SCREENING TESTS (C. B. Hoelzel and A. Robinson)

An incubator oven was adapted to serve as a humidity chamber for the preliminary adhesive moisture resistance test measurements.

The initial measurements were made on lap-seam samples at 54°C/75% RH for 31 hours and 25°C/100% RH for 44 hours. Under neither condition was evidence of separation noted. Further work is in progress.

In consideration of the results from the adhesive thermal analysis study(1), a thermomechanical analyzer (TMA) was introduced to Manufacturing as a possible adhesive physical property screening tool(2).

REFERENCES

1) A. Robinson, "The Effect of Plasticizer Change in Ajax 563-8 Products," memo to G. M. Crowe, 8/21/81.

2) A. Robinson, "An Instrument for Screening Incoming Adhesives," memo to R. M. Gilman, 8/21/81.

Alphonso Robinson

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